Unit Activities:

Setting the Stage. Objectives, Word Splash Predictions, Foodborne Illness PowerPoint

Instructional Events:

Gain Attention, Inform Learners of the Objectives, Stimulate Recall of Prior Learning, Present the Stimulus

Materials:

Foodborne Illness PowerPoint

Student Handouts

Word Splash (pg. 42)

Foodborne Illness: Risks and Prevention (pg. 47)

Learning Objectives:

Students will be able to:

1. Identify and recognize characteristics and symptoms of Foodborne Illnesses.
2. Connect prior knowledge of symptoms and cause of Foodborne Illnesses to relevant vocabulary.

National Standards:

NSS-G.K-12.6: The Uses of Geography-Understand how to apply geography to interpret the present & plan for the future.

Activities:

Setting the Stage (7 minutes)

Purpose: To capture attention and prepare students to learn and participate

- Write the following question on the board or overhead: **Has anyone in your family (yourself included) ever become sick as a result of food poisoning? Explain what they ate, how long they were sick, and what medical treatment, if any, they required to get better.**
    - Ask students to write down their responses to the question. Allow 3-5 minutes for students to do so.
    - Allow students to share their responses with the class.
    - Pose questions for discussion:
        - Why do you think certain foods caused foodborne illnesses?
        - What do you think could have been done to avoid getting sick?
    - Explain to students that food poisoning results from bacteria that grow in food that is mishandled.

Inform the learner of the Objectives (3 minutes)

Purpose: To help students understand what they are responsible for learning

- Tell students: **In this unit we are going to learn what causes foodborne illnesses, how to prevent them, and the possible outcomes of mishandling foods.**

Activities:

Word Splash Predictions (15 minutes)

Purpose: To familiarize students with new words, activate prior knowledge, and provide a guide to the concepts they will learn in this lesson.

Learner Level: Average-High

- Distribute the **Foodborne Illness Word Splash**
- Ask students to read each word and think about how that word is related to foodborne illness.
- Working in pairs or individually, students should then write at least 5 prediction statements similar to the example given on the sheet and underline words used from the Word Splash.
- Remind students that they will complete the Statements of Fact later in the lesson.

Learner Level: Low-Average

- Before class write each of the word splash words on a separate index card.
- Give one card to each student or pair.
- Ask each student to think for 1 minute about how their word might be related to foodborne illnesses.
- Ask each student to share the relation of their word with the class.
- Record student responses of "predictions" on the board.
- Remind students that they will use their word later in the lesson to create Statements of Fact.

Foodborne Illness PowerPoint (30 minutes)

Purpose: To provide new information to students

Learner Level: All

- Explain to students that in this presentation they will learn about foodborne illnesses and how to prevent them.
- Use the PowerPoint presentation *Foodborne Illness: Risks and Prevention* (The PowerPoint can be downloaded from www.handsonclassrooms.org)
- Give each student a copy of the worksheet **Foodborne Illness: Risks and Prevention** outline.
- Allow students time to read and answer the preview question (slide 2) before beginning the lecture. Discuss students' responses before continuing.
- Present and explain slides 3-6. Encourage students to record important details on their outline.
- Allow students time to read and answer the Review Question on slide 7. Discuss students' responses before continuing.
- Present and explain slides 8-10. Encourage students to record important details on their outline.
- Allow students time to read and answer the Review Question on slide 11. Discuss students' responses.

Unit Activities:

Review, Word Splash Statements of Fact, Bacteria that Cause Foodborne Illness

Instructional Events:

Provide Learner Guidance, Elicit Performance,

Materials:

Internet or copies of information if no Internet access

Student Handouts

Wordsplash (from Day 1) (pg. 42)

Bacteria that Cause Foodborne Illnesses (pg. 51)

Learning Objectives:

Students will be able to:

1. Research and communicate characteristics of bacteria that cause Foodborne Illnesses
2. Identify symptoms of Foodborne Illnesses

National Standards:

NSS-G.K-12.6: The Uses of Geography-Understand how to apply geography to interpret the present & plan for the future.

Activities:

Review (5 minutes)

Daily Review Question: **Yesterday we learned what causes foodborne illnesses. What is one thing that you learned that surprised you the most? Today we are going to focus on the three most common bacteria associated with foodborne illnesses around the world.**

Word Splash Statements of Fact (10 minutes)

Purpose: To facilitate the transfer of new knowledge to long-term retention

Learner Level: Average-High

- Ask students to review the predictions they first made on their word splashes. How many were correct?
- Now ask students to write at least 5 statements of fact using words in the word splash. Encourage students to use 5 new words from the Word Splash.
- Discuss these as a class.

Learner Level: Low-Average

- Refer to student predictions recorded on the board from earlier.
- Discuss which predictions were correct and which were incorrect.
- Ask students to work individually or with a partner to write 5 new statements of fact.
- Encourage volunteers to share their responses. Record these responses on the board.

Activities:

Bacteria that Cause Foodborne Illnesses (40 minutes)

Purpose: To allow the learner to practice the new knowledge. The repetition further increases the likelihood of retention of new information.

Learner Level: Average-High

- This activity introduces various foodborne pathogens.
- Distribute the **Bacteria that Cause Foodborne Illnesses** chart.
- Students may work individually or in pairs to complete the sheet.
- Direct students to the following website to complete their worksheet:

  http://www.fightbac.org/content/view/11/18/ (Accessible from the student section of our website: www.handsonclassrooms.org)

- Once students have completed the worksheet, discuss their answers as a group to ensure that all students have the correct information.

Learner Level: Low or if computer access is limited

- Use the above activity with any of the following modifications:
  - Provide students with a hard copy of the website and allow them to use a highlighter to identify information needed to complete their charts.
  - Once they have identified all of the correct information, have them work individually or in pairs to transfer the information to their charts.
  - Before distributing the chart to students, fill in several of the boxes so that students are not overwhelmed by the entire chart.

Unit Activities:

Review, What's the Cause? Student Reflection

Instructional Events:

Provide Feedback, Assessing Performance

Student Handouts

What's the Cause? (pg. 54)

Learning Objectives:

Students will be able to:

1. Apply knowledge of symptoms, onset time, and pathogens to identify causative agents in Foodborne Illness scenarios.
2. Evaluate their own understanding of the risks and preventative measures of foodborne illnesses.

National Standards:

NSS-G.K-12.6: The Uses of Geography- Understand how to apply geography to interpret the present & plan for the future.

Activities:

Review (5 minutes)

Daily Review Question: **Yesterday we studied the most common bacteria associated with foodborne illnesses. What types of foods were most often mentioned? Today we are going to research recent outbreaks of foodborne illnesses around the world.**

What's the Cause? (20 minutes)

Purpose: To assess and facilitate further student learning

Learner Level: All

- Distribute the **What's the Cause** worksheet to students.
- Students should work individually to determine which foodborne pathogen is responsible for the illness described in each scenario based on the knowledge they gained from the Internet Activity.
- Discuss answers as a class; ask students to defend their responses.

Student Reflection (20 minutes)

Purpose: To determine if students are successfully meeting the learning objectives for this lesson.

Learner Level: All

- Ask student to consider all they've learned so far about foodborne pathogens and foodborne illnesses.
- Have each student write:
    - 3 examples of foodborne bacteria that make you sick
    - 2 ways to prevent foodborne illness.
    - 1 thing they'll tell their parents about foodborne illness tonight.
- Encourage students to share their responses with the class.

Unit Activities:

Review, Research FBI Outbreaks

Instructional Events:

Enhance Retention and Transfer

Materials:

Internet access, computers

Student Handouts

Researching Foodborne Illnesses Worksheet (pg. 58).

Learning Objectives:

Students will be able to:

1. Demonstrate proficient research skills by locating and evaluating a variety of teacher selected non-fiction
2. Understand the relationship between specific standard of living measures and the quality of life in a particular country.
3. Critically analyze connections between standards of living and foodborne illnesses.
4. Identify credible sources of electronic information

National Standards:

NSS-G.K-12.6: The Uses of Geography- Understand how to apply geography to interpret the present & plan for the future.

Activities:

Review (5 minutes)

Daily Review Question: **Yesterday we started researching outbreaks of foodborne illnesses around the world. What are some countries in which you found recent outbreaks? Today you are going to complete your research and begin creating a map to illustrate your findings.**

Researching Foodborne Outbreaks: (50 minutes)

Purpose: To allow students to develop expertise with the new information and create a construct for transferring knowledge to long-term retention.

Learner Level: Average-High

- Distribute the Researching Foodborne Illnesses worksheet to each student.
- Students will use the website: http://www.foodhaccp.com/outbreak.htm to find five major outbreaks of foodborne illnesses with 5 different organisms around the world since 2002. It is important that students realize that foodborne illness is a current problem.
- The outbreaks must come from five different countries to ensure that students understand that foodborne illness is a concern for countries all around the world.
- Students are to record the location, date, number of cases, and suspected food source for each outbreak in the first chart.
- Students should then use the CIA Factbook website: http://www.cia.gov/cia/publications/factbook/docs/profileguide.html to record vital statistics from each country in which they found an outbreak. This information should be recorded in the second chart.
- Have students answer the three questions at the bottom of the sheet.
- Students will use this information in the next activity to construct a map.
- Use the **Researching Foodborne Illnesses** rubric to assess students' work.

Activities:

Researching Foodborne Outbreaks (50 minutes)

Learner Level: Low-Average or if computer access is limited

- Distribute the **Researching Foodborne Illnesses** worksheet to each student.
- Provide each student (or small groups) with hard copies of selected outbreaks to read.
- Students are to record the location, date, number of cases, and suspected food source for each outbreak in the first chart.
- Students should then use the CIA Factbook website: http://www.cia.gov/cia/publications/factbook/docs/profileguide.html to record vital statistics from each country in which they found an outbreak. This information should be recorded in the second chart.
- Have students answer the three questions at the bottom of the sheet.
- Students will use this information in the next activity to construct a map.
- Use the Researching Foodborne Illnesses rubric to assess students' work.

You may need to define and explain the vital statistics that students are to collect:

Total Life Expectancy (LE): The number of years that a person born in that country today can expect to live. (This indicates the quality of nutrition and health care available to the average person.)

Land Use (LU): The distribution of land use in that country. Students are asked to find arable land (land that is fit or used for growing crops) and the amount of land that is permanently used for growing crops. (These figures indicate how much of the country's food supply is grown locally versus imported.)

Population Below Poverty Line (PBPL): The percentage of the country's population that lives in poverty. (This figure indicates a country's general standard of living.)

Agricultural Products: (AP): The agricultural products produced annually in a country.

Unit Activities:

Review, Outbreak Maps

Instructional Events:

Enhance Retention and Transfer

Materials:

Reference maps, atlases, colored pencils

Student Handouts:

Blank outline map (pg. 62)

Learning Objectives:

Students will be able to:

1. Demonstrate an understanding of the characteristics of maps and geographic tools.
2. Understand the relationship between specific measures and the quality of life in a particular country.
3. Critically analyze connections between standards of living and foodborne illnesses.
4. Apply knowledge of location of places and geographic features to create an outbreak map.

National Standards:

NSS-G.K-12.6: The Uses of Geography-Understand how to apply geography to interpret the present & plan for the future.

Activities:

Review: (5 minutes)

Daily Review Question: **Yesterday you began creating maps that illustrate your outbreaks research. What was the poorest country in which you found an outbreak? What was the wealthiest? Today you are going to complete your maps and you are going to assess your own work.**

Creating Foodborne Illness Outbreak Maps: (50 minutes)

Purpose: To allow students to develop expertise with the new information and create a construct for transferring knowledge to long-term retention.

Learner Level: All

Using the data generated from their **Researching Foodborne Illnesses** direct students to:

- Construct a map showing their findings. (They may use the blank world outline map provided or draw their own.)
- Students should have access to reference maps, atlases, colored pencils, etc.
- For each outbreak, students should label the location, date, number of cases, suspected sources, and each neighboring country. (Students should create a legend or key due to space restrictions.)
- Students should complete the **Foodborne Illness Outbreak Map Self-Assessment (pg.63).**

Unit Activities:	Review, Debriefing, Self-Assessment
Instructional Events:	Enhance Retention and Transfer
Student Handouts	Foodborne Illness Outbreak Map Self-Assessment (pg. 63).

Learning Objectives:	Students will be able to: 1. Summarize symptoms of Foodborne Illness and preventative measures. 2. Construct a well supported argument to justify their position on possible relationships between standard of living and foodborne illnesses. 3. Describe the relationship between advances in science, technology, and outbreaks of foodborne illnesses.
National Standards:	NSS-G.K-12.6: The Uses of Geography- Understand how to apply geography to interpret the present & plan for the future.

Activities:

Review (5 minutes)

Daily Review Question: **Last week we learned about the causes and prevention of foodborne illnesses. You also researched some specific bacteria that can make you sick and learned about outbreaks of foodborne illnesses worldwide. Did any of you handle your food differently this weekend as a result of what you learned last week? Today we are going to discuss your research findings and outbreak maps and finish up with a reflection on what you have learned over the past week.**

Debriefing: (25 minutes)

- Lead a brief classroom discussion on the following:
    - Are there connections between a country's standard of living and outbreaks of foodborne illnesses? If so, what do you think those connections are?
- There is no right or wrong answers here. Students should be able to justify their discussion based on the standard of living data they collected.

Self-Assessment (10 minutes)

- Students should complete the **Foodborne Illness Outbreak Map Self-Assessment**